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Amendments to the Claims

The following listing of claims replaces all prior versions, and listings, of claims in the application:

1. (currently amended) A computer implemented method for emulating execution of legacy instructions, where said legacy instructions have instruction addresses, comprising:
 accessing blocks of said legacy instructions, said blocks having block addresses,
 storing translations, into a translation store, translation information for each of the legacy instructions,
 storing translation indications, for indicating translated blocks, into an indexing table at block numbers determined by said block addresses, said storing translation indications using a subset of block address digits whereby block numbers in said table are the same for multiple different blocks,
executing translated instructions to emulate said legacy instructions,
where for each of the legacy instructions for each particular legacy instruction of a translated block having a particular block number in said table, said storing translations step includes translating the particular legacy instruction into one or more translated instructions for emulating the particular legacy instruction, and
if the particular legacy instruction is a store instruction, to check the indications in said table for said particular block number to determine if instruction data has been stored for said particular block number;
if instruction data has been stored for said particular block number, to check said translation store to determine if instruction data has been modified; and otherwise, if instruction data has not been stored for said particular block number, to bypass said checking.

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22 if the legacy instruction is not a store instruction, going to said step of
 23 executing translated instructions,

24 if the legacy instruction is a store instruction, where the store instruction
 25 stores to a particular block with a particular block number in said
 26 table, checking the indications in said table for the particular block
 27 number, and,

28 if the indications indicate that said particular block has not
 29 been translated, going to said step of executing
 30 translated instructions,

31 if the indications indicate that said particular block has been
 32 translated, checking said translation store to determine
 33 if legacy instruction data has been modified and if
 34 modified, repeating the step of translating the legacy
 35 instructions and going to said step of executing
 36 translated instructions; and otherwise, if legacy
 37 instruction data has not been modified, going to said
 38 step of executing translated instructions.

1 2. (original) The method of Claim 1 wherein said step of storing translation indications stores
 2 indications for only a subset of all the translated blocks.

1 3. (original) The method of Claim 2 wherein said subset of all the translated blocks is stored in a
 2 cache.

1 4. (canceled).

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1 5. (currently amended) The method of Claim 1 [[4]] wherein said block address digits are
2 included in a three digit hexadecimal address field and said subset of block address digits is the
3 center digit.

1 6. (original) The method of Claim 1 wherein said legacy instructions are for a legacy system having
2 a S/390 architecture.

1 7. (original) The method of Claim 1 wherein said legacy instructions are object code instructions
2 compiled/assembled for a legacy architecture.

1 8. (original) The method of Claim 1 wherein said legacy instructions include store instructions for
2 modifying instruction code.

1 9. (original) The method of Claim 1 wherein said translation indications include a state field for
2 each block number indicating whether the block represented by said block number has been
3 modified.

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1 10. (currently amended) The method of Claim 1 wherein,
 2 ~~said step of storing translation indications stores indications for only a subset of all the~~
 3 ~~translated blocks and uses a subset of block address digits whereby block numbers~~
 4 ~~in said table are the same for multiple different blocks,~~
 5 said subset of all the translated blocks is stored in a cache,
 6 said translation indications include a state field storing a count for each block number
 7 indicating whether the block represented by said block number has been modified,
 8 said count in a state field is incremented each time a block represented by said block number
 9 has been modified in said cache,
 10 said count in a state field is decremented each time a block represented by said block number
 11 has been removed from said cache,
 12 said bypassing said step of checking step said translation store occurs only when said count
 13 is zero.

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1 11. (currently amended) A computer implemented method for dynamic emulation of object code
 2 legacy instructions, where the legacy instructions have instruction addresses determined by
 3 compilation/assembly of source code and where the legacy instructions include self-modifying store
 4 instructions for modifying instruction code, comprising:

5 accessing blocks of said legacy instructions, said blocks having block addresses,
 6 storing translations, into a translation store translation information, for each of the legacy
 7 instructions,

8 storing translation indications, for only a subset of all the translated blocks, into an indexing
 9 table at block numbers determined by said block addresses, said storing translation
 10 indications,

11 using a subset of block address digits whereby block numbers in said table
 12 are the same for multiple different blocks,

13 including a state field storing a count for each block number indicating
 14 whether the block represented by said block number has been
 15 modified by self-modifying store instructions,

16 executing translated instructions to emulate said legacy instructions,
 17 where for each particular of the legacy instructions of said subset of all the translated blocks
 18 having a particular block number in said table,

19 said storing translations step includes translating the particular legacy
 20 instruction into one or more translated instructions for emulating the
 21 particular legacy instruction,

22 storing said translated instructions in a cache,

23 if the legacy instruction is not a store instruction, going to said step of
 24 executing translated instructions,

25 if the particular legacy instruction is a store instruction, where the store
 26 instruction stores to a particular block with a particular block number

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27 in said table, checking the indications in said table for said particular
28 block number ~~to determine if instruction data has been stored for~~
29 particular block number, if and,

30 if the instruction data has been stored for indications indicate
31 that said particular block number has not been
32 translated, going to said step of executing translated
33 instructions,

34 if the indications indicate that said particular block number
35 has been translated, checking said translation store to
36 determine if legacy instruction data has been modified
37 and if modified, repeating the step of translating the
38 legacy instructions and going to said step of executing
39 translated instructions; and otherwise, if instruction
40 data has not been stored for said particular block
41 number, bypassing said checking: modified, going to
42 said step of executing translated instructions.

1 12. (currently amended) The method of Claim 11 wherein said count in a state field is incremented
2 each time a block represented by said block number has been modified in said cache, said count in
3 a state field is decremented each time a block represented by said block number has been removed
4 from said cache, said ~~bypassing said step of checking step~~ said translation store occurs only when
5 said count is zero.

1 13. (original) The method of Claim 11 wherein said legacy code is compiled/assembled for a native
2 architecture and executes as a guest on a host architecture.

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1 14. (original) The method of Claim 13 wherein the native architecture employs CISC instructions
2 and the host architecture employs RISC instructions.

1 15. (currently amended) A computer system for emulating execution of legacy instructions, where
2 said legacy instructions have instruction addresses, comprising:
3 a group access unit for accessing blocks of said legacy instructions, said blocks having block
4 addresses,
5 a translator for translating the legacy instructions to form translated instructions,
6 a translation store for storing ~~translation information for each of the~~ translated legacy
7 instructions,
8 an execution unit for executing said translated instructions to emulate said legacy
9 instructions,
10 an index table for storing translation indications [[,]] for indicating translated blocks at block
11 numbers determined by said block addresses, said index table storing translation
12 indications using a subset of block address digits whereby block numbers in said
13 table are the same for multiple different blocks,
14 where for each particular of the legacy instructions of a translated block having a particular
15 block number in said table, said translation store includes one or more translated
16 instructions for emulating the legacy instruction, and,
17 to translate the particular legacy instruction into one or more translated
18 instructions for emulating the particular legacy instruction;
19 if the legacy instruction is not a store instruction, the computer system goes
20 to the execution unit for executing said translated instructions,
21 if the particular legacy instruction is a store instruction, to check where the
22 store instruction stores to a particular block with a particular block

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23 number in said table, the computer system checks the indications in
 24 said table for said particular block number to determine if instruction
 25 data has been stored for said particular block number, and,
 26 if the indications indicate that if instruction data has been
 27 stored for said particular block number, has not been
 28 translated, the computer system goes to the execution
 29 unit for executing said translated instructions,
 30 if the indications indicate that said particular block to check
 31 has not been translated, said translation store is
 32 checked to determine if instruction data has been
 33 modified and, if modified, the translator repeats
 34 translating the legacy instructions and the computer
 35 system goes to the execution unit for executing said
 36 translated instructions; and otherwise, if instruction
 37 data has not been stored for said particular block
 38 number, to bypass said checking modified, the
 39 computer system goes to the execution unit for
 40 executing said translated instructions.

1 16. (original) The system of Claim 15 wherein said index table stores indications for only a subset
 2 of all the translated blocks.

1 17. (original) The system of Claim 16 including a cache and wherein said subset of all the
 2 translated blocks is stored in said cache.

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18. (canceled).

1 19. (currently amended) The system of Claim 18 15 wherein said block address digits are included
2 in a three digit hexadecimal address field and said subset of block address digits is the center digit.

1 20. (original) The system of Claim 15 wherein said legacy instructions are for a legacy system
2 having a S/390 architecture.

1 21. (original) The system of Claim 15 wherein said legacy instructions are object code instructions
2 compiled/assembled for a legacy architecture.

1 22. (original) The system of Claim 15 wherein said legacy instructions include store instructions
2 for modifying instruction code.

1 23. (original) The system of Claim 15 wherein said index table includes a state field for each block
2 number indicating whether the block represented by said block number has been modified.

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1 24. (currently amended) The system of Claim 15 wherein,
2 ~~said index table stores indications for only a subset of all the translated blocks and uses a~~
3 ~~subset of block address digits whereby block numbers in said table are the same for~~
4 ~~multiple different blocks,~~
5 ~~said subset of all the translated blocks,~~
6 ~~said system includes a cache for storing said subset of all the translated blocks,~~
7 ~~said index table includes a state field storing a count for each block number indicating~~
8 ~~whether the block represented by said block number has been modified,~~
9 ~~said count in a state field is incremented each time a block represented by said block number~~
10 ~~has been modified in said cache,~~
11 ~~said count in a state field is decremented each time a block represented by said block number~~
12 ~~has been removed from said cache,~~
13 ~~said bypassing of said checking occurs translation store is checked only when said count is~~
14 ~~zero.~~

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1 25. (currently amended) A computer system for dynamic emulation of object code legacy
 2 instructions, where the legacy instructions have instruction addresses determined by
 3 compilation/assembly of source code and where the legacy instructions include self-modifying store
 4 instructions for modifying instruction code, comprising:

5 a group access unit for accessing blocks of said legacy instructions, said blocks having block
 6 addresses,

7 storing into a translation store for storing translation information for each of the legacy
 8 instructions,

9 an index table for storing translation indications, for only a subset of all the translated blocks
 10 at block numbers determined by said block addresses, said index table storing
 11 translation indications,

12 using a subset of block address digits whereby block numbers in said table
 13 are the same for multiple different blocks,

14 and including a state field storing a count for each block number indicating
 15 whether the block represented by said block number has been
 16 modified by self-modifying store instructions,

17 a cache for storing translated instructions.

18 an execution unit for executing said translated instructions to emulate said legacy
 19 instructions,

20 a legacy code translator operating, for each particular of the legacy instruction instructions
 21 of said subset of all the translated blocks having a particular block number in said
 22 table,

23 to translate the particular legacy instruction into one or more translated
 24 instructions for emulating the particular legacy instruction,

25 To to store said translated instructions in a the cache and,

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26 if the legacy instruction is not a store instruction, the computer system goes
 27 to said execution unit for executing said translated instructions,
 28 if the particular legacy instruction is a store instruction, to check where the
 29 store instruction stores to a particular block with a particular block
 30 number in said table, the computer system checks the indications in
 31 said table for said particular block number to determine if instruction
 32 data has been stored for said particular block number and,
 33 if the indications indicate that if instruction data has been
 34 stored for said particular block number, has not been
 35 translated, the computer system goes to said execution
 36 unit for executing said translated instructions.
 37 if the indications indicate that said particular block checking
 38 said translation store has been translated, the
 39 computer system checks to determine if instruction
 40 data has been modified; and if modified, the computer
 41 system goes to said translator to repeat operating to
 42 translate the legacy instructions into one or more
 43 translated instructions and the computer system goes
 44 to said execution unit for executing said translated
 45 instructions; and otherwise, if instruction data has not
 46 been modified stored for said particular block number,
 47 to bypass said checking and go to said execution unit
 48 for executing said translated instructions.

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- 1 26. (currently amended) The system of Claim 25 wherein said count in a state field is incremented each time a block represented by said block number has been modified in said cache, said count in a state field is decremented each time a block represented by said block number has been removed from said cache, said bypass said checking step occurs only when said count is zero.
- 1 27. (original) The system of Claim 25 wherein said legacy code is compiled/assembled for a native architecture and executes as a guest on a host architecture.
- 1 28. (original) The system of Claim 27 wherein the native architecture employs CISC instructions and the host architecture employs RISC instructions.